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491 this district amounted to 25,000 tons, while the native products shipped out of it amounted to 13,000 tons.[57] In Kweichow Province four short highways leading to the national minority district of the province were completed in 1954.[58] The Kweichow-Kiangsi Highway from Kweiyang to Chin-ch'eng-chiang was also opened to traffic in the same year.[59] Road improvement work on the Kweichow-Yunnan Highway was begun in 1955.[60]

Because of the limited number of railways in operation in Southwest China, highway transportation plays a very important role in this region, in spite of the comparatively high cost of motor fuel and a shortage of motor vehicles.

## III. INLAND WATER ROUTES

505 Inland water shipping is a major
487 means of transportation in Southwest China. The two most important navigable rivers are Yangtze and the Chia-ling rivers. There are

57. China Daily News, New York, Nov. 23, 1955.
58. Ibid., Aug. 16, 1955.
59. Ibid.
60. Ibid.

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505
487 numerous minor streams in this region, but most of them are only navigable by junk. Some of the region's rivers are listed in Table 4.

Table 4. The Inland Water Routes of Southwest China*

(Unit: km. & kilometer.)

| RIVER | TERMINALS | DISTANCE (kilometers) | GRADE |
|---|---|---|---|
| Yangtze | Ich'ang-Ipin | 1062 (676 Mi.) | 3 |
| Chinsha | Ipin-Chinchiangchieh | 1000 (625 Mi.) | 5 |
| Heng | Hengchiang-Yenchin | 80 ( 50 Mi.) | 6 |
| Min | Ipin-Loshan | 160 (100 Mi.) | 4 |
| Chingshui | Loshan-Chengtu | 168 (106 Mi.) | 5 |
| Tatu | Yaokut'o-Hapien | 110 ( 69 Mi.) | 6 |
| | Loshan-Chink'ouho | 100 ( 63 Mi.) | 6 |
| Ch'ingi | Loshan-T'iench'ian | 190 (119 Mi.) | 6 |
| | Yaan-Yungching | 30 ( 19 Mi.) | 6 |
| Nei | Chengtu-Kuanhsien | 70 ( 44 Mi.) | 6 |
| Wai | Kuanhsien-P'engshan | 110 ( 69 Mi.) | 6 |
| T'o | Luhsien-Weichiang | 150 ( 94 Mi.) | 5 |
| | Weichiang-Chu'ngning | 408 (255 Mi.) | 6 |
| Ching | Fushan-Weiyüan | 160 (100 Mi.) | 6 |
| Yungning | Wach'i-Hsüyung | 120 ( 75 Mi.) | 6 |
| Ch'ihshui | Hochiang-Ch'ihshui | 80 ( 50 Mi.) | 5 |
| | Ch'ihshui-Maot'ai | 164 (103 Mi.) | 6 |
| Ch'i | Chiangk'ou-Tungch'i | 102 ( 64 Mi.) | 5 |
| Chialing | Chungking-Kuangyüan | 740 (463 Mi.) | 4 |
| | Kuangyüan-Lüehyang | 200 (125 Mi.) | 5 |
| Paishui | Ch'aot'ieni-Mienhsien | 140 ( 88 Mi.) | 5 |
| | Chaohua-Pik'ou | 150 ( 94 Mi.) | 6 |
| Fu | Hoch'uan-Shehung | 379 (237 Mi.) | 5 |
| | Shehung-P'ingwu | 406 (254 Mi.) | 6 |
| Ch'ü | Hoch'uan-Kuangan | 125 ( 78 Mi.) | 5 |
| | Kuangan-T'ungchiang | 332 (208 Mi.) | 6 |
| Nan | Chiangk'ou-Nanchiang | 138 ( 86 Mi.) | 6 |
| T'ung | Sanhui-Hsüanhan | 110 ( 69 Mi.) | 6 |
| Chung | Hsüanhan-Shuanghok'ou | 92 ( 58 Mi.) | 6 |
| Hou | Hsüanhan-Nanyüan | 120 ( 75 Mi.) | 6 |
| Wu | Fuling-Liukuang | 585 (366 Mi.) | 5-6 |
| Ch'ing | Itu-Chuhopa | 210 (131 Mi.) | 5 |
| | TOTAL..... | 8031 (5019 Mi.) | |

* Hang-tao Nang /Navigation Route Network/, Nanking, Hsing-cheng-yuan Hsin-wen-chü, /Bureau of Information, Executive Yuan/, 1947, pp. 28-29.

The different grades of waterways as determined by navigability, are shown in Table 5.

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Table 5. Navigability of Rivers*

| Rating | Depth | Navigability by Tonnage |
|---|---|---|
| Grade 1 | 5 to 8 meters (16-26') | 10,000 |
| Grade 2 | 3.8 meters (12') | 2,000 |
| Grade 3 | 3.2 meters (11') | 1,000 |
| Grade 4 | 2.8 meters (9') | 6,000 |
| Grade 5 | 2.5 meters (8') | 300 |
| Grade 6 | 1.5 meters (5') | 60 |

* The Navigation Route Network, Nanking, Bureau of Information, Executive Yuan, 1947, pp. 3-5.

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505 The section between I-chang and I-pin
487 of the Yangtze River has a navigability rating of Grade 3, i.e., navigable for boats up to 1,000 tons. The section between I-pin and Lo-shan on the Min River and the section between Chungking and Kuang-yüan on the Chia-ling River have a navigability rating of Grade 4, navigable by steamers of 600 tons. All the other rivers have a lower rating than Grade 4 are navigable only by junk.

A. Inland Shipping

501 Before the resistance against Japan, China's total shipping tonnage was about 576,000 tons, including 124 ocean steamers totaling 367,383 tons and 3,333 river steamers totaling 208,617 tons. During the war, it was estimated that about 495,329 tons of both types of steamers were lost.[61] After the war, 2,751 Japanese ships of various types, with a total of 251,288 tons, were confiscated, including 507 river boats (62,375 tons) in the Yangtze River area.[62]

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61. Hang-yün [Navigation], Nanking, Hsing-cheng-yuan, Hsin-wen-chü [Bureau of Information, Executive Yuan], 1949, p. 24.

62. Ibid., p. 23.

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503 junks and steamers to reach many places formerly inacessible.[66] As of September 1955, there were approximately 100,000 kilometers of navigable waterways in Southwest China.[67]

502 The use of river lights along the upper Yangtze between I-chang and Chungking facilitated night sailing and reduced the running time by as much as six days.[68]

505 The former Min-sheng Industrial Corporation, the largest privately owned shipping company in China, was founded in Szechwan. It was reorganized as a joint public-private firm in 1952, and its name was changed to the Min-sheng Shipping Corporation by the Communist regime.[69] The Ch'uan-chiang Steamship Company, a merger of three steamship companies -- the Ch'iang-hua, the Hsieh-hsiang, and the Hua-chung -- was recently converted into a joint public-private corporation.[70] Other, smaller shipping firms in Southwest China were reorganized as well.[71]

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66. New China News Agency, Chungking, Oct. 12, 1955.
67. Wen-hui Daily, Hong Kong, Oct. 12, 1955.
68. Navigation in the Communist Area, Taipei, 1953, p. 16.
69. The Economic Yearbook, Hong Kong, 1954, p. 52.
70. Wen-hui Daily, Hong Kong, Sept. 6, 1955.
71. Ibid.

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[502] The adoption of the "single file towing" method was recommended by Soviet experts, and it has increased both the speed of shipping and the volume of cargo shipped. It was reported that the Min-sheng Shipping Corporation has made a considerable increase in annual volume of freight since reorganization in 1952. Its target set for 1955 was three and half times that of 1952.[72] The reported efficiency of Min-sheng's tug boats in 1954 was 318 per cent higher than that reported in 1953.[73]

The freight rates for 24 manufactured articles were reduced by an average of 40 per cent in 1955, according to the Ministry of Communication.[74] The reduction of freight rates was made possible by the lowering of transportation costs as the result of improvements in towing methods and other techniques.

000 In Southwest China, Chungking is the most

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72. Ibid.
73. Ibid.
74. New China News Agency, Peking, Oct. 20, 1955.

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khi. The mountain is well known to the Tibetans, who call it Zhi-dag mug-po written gzhi-bdag-smug-po [in Na-khi Shi-zhi muan-bbu]; (in the Tibetan classic of the mountain god Dra-lha [dgra-lha] the mountain is called Jang-ri-mug-po [ljang-ri-smug-po ལྗང་རི་སྨུག་པོ་], *i.e.*, the purple mountain of Jang = Mo-so); another Na-khi name for it is Sä-bpi a-na Ngyu. On this mountain grows a bamboo from which the Na-khi (used to) cut their arrows. On its slopes there was once a temple called Ling-shou Ssu 靈壽寺, built by the Mu family during the Ming dynasty. In the fourth year of Ch'ien-lung (1739), a lama, known as the Ssu-pao la-ma 四寶喇嘛, came with a retinue to pay his respects to the prefect of Li-chiang, called Kuan Hsüeh-hsüan 管學宣. He induced him to subscribe funds and to have the priest, Ming Chü 明具, and others solicit funds for the building of the Wen-feng Yüan 文峯院 lamasery, or Wen-feng Wan as it is called in Yün-nan, situated on the slopes of the mountain.

*Meng-hsi Shan* 蒙喜山 is 50 li north-west of Li-chiang; at its foot was the A-khi (A-bsi 阿喜) guard-house at the A-khi ferry across the Yangtze. The mountain is terraced and is several ten li long, resembling a screen.

*A-na Shan* 阿那山 [6] is 270 li north of Li-chiang, on the southern border of the ancient Pao-shan chou 寶山州. This is the still more ancient Hsieh-lung 邪龍, so known during the Han dyansty (206 B.C.–A.D. 24), and in the present district of La-pao 剌寶 (La-bpu). On this mountain was an ancient stockaded village called A-na-ho 阿那和.

*Lao-chün Shan* 老君山 [7] is 250 li south-west of Li-chiang and rises high into the clouds; its height is 14,100 feet. It is north-west of the town of Chien-ch'uan, and is reckoned as the father of all the mountains of Yün-nan. A powerful spring issues from it. It is believed that Lao-tzu 老子 once prepared the magic drug of immortality on this mountain — hence the name.

*Wang-chiang Shan* 望江山 is 80 li south-west of Li-chiang. The Shih-ku 石鼓 Ch'ung-chiang Ho 衝江河 [8] flows between Lao-chün Shan and Wang-chiang Shan, the latter being south of Shih-ku.

[6] There is also a mountain, or rather spur, west of the village of Dü-gkv (at the head of the Li-chiang plain), which is called 'A-na-gkv.

[7] This mountain is also called Lo-chün Shan 羅均山 and La-chün Shan 剌均山. The *Yün-nan T'ung-chih*, ch. 22, fol. 5b, quotes these as synonyms for Lao-chün Shan. It also states that Lo-chün Shan 羅均山 is 20 li north-west of the old Lin chou district. Its ancient name is La-kou Shan 剌鉤山. The second character is apparently a misprint and should be *chün* 鈞. Five deep ponds are on its summit, and the natives pasture their yak on the mountain, hence it is also called Mu-niu Shan 牧牛山. It lies 250 li south-west of Li-chiang. On Lao-chün Shan is a *ling-ch'üan* 靈泉 (mysterious spring); as the water flows down the mountain it is called Lao-chün Ho 老君河, another name for it being Shih-lai Chiang 石賚江. From the eastern slopes issues the source of the Chien Hu 劍湖 (Chien-ch'uan Lake) — this being merely a tributary of the Yang-pi Chiang. The *Yün-nan T'ung-chih* states that both waters flow into the Chien-ch'uan Lake. This is, of course, not so for they flow into the Yang-pi, and the Chien-ch'uan Lake has an outlet into the Yang-pi south of Chien-ch'uan.

[8] It is also written Ch'ung Chiang 冲江. The stretch from where it flows west to east is called La-pa Ho 拉巴河 (La-ba gyi in Na-khi), as one branch of it has its source in the La-ba Ngyu (La-ba-gko Mountains), called in Chinese La-pa Shan 拉巴山, west of Shih-ku. In Na-khi the mountain is called La-ba Ngyu after the village of La-ba, the Chinese Shih-ku.

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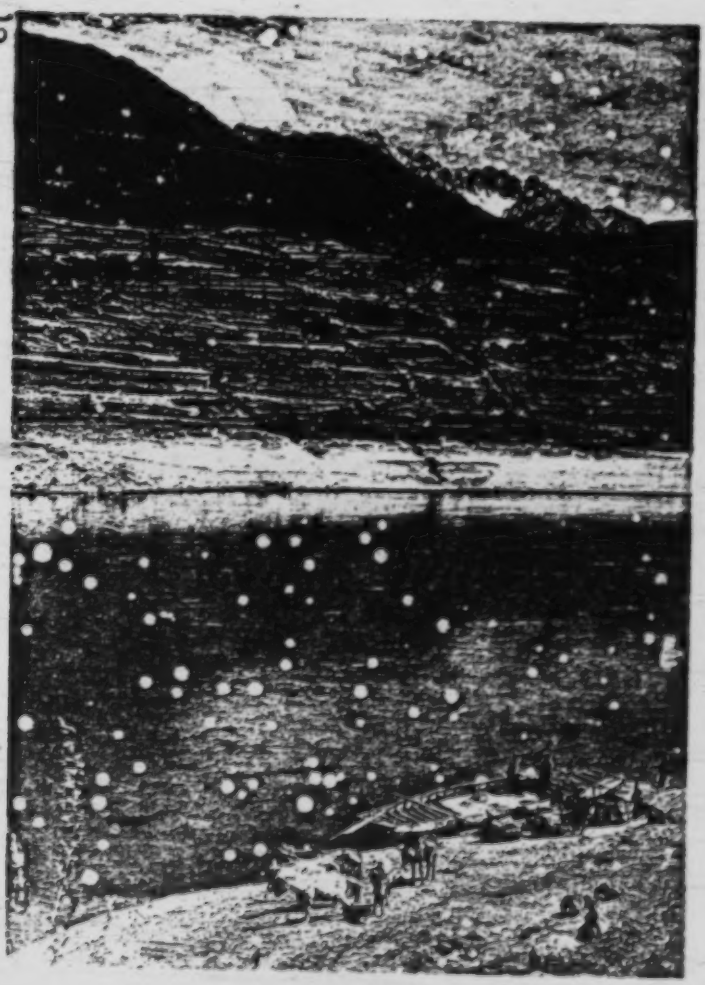

PLATE 114. — THE FERRY ACROSS THE YANGTZE AT YU-LO

雲雷村金沙江渡口

Photographed from near the hamlet of Ggô-lo elevation 6,070 feet, looking east towards Yu-lo (upper extreme left). The Yü-lung Shan with Shan-tzu-tou in the distance.

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*733 16,000 feet in height; three small valleys descend from it and unite beyond
*737 our spur to form with the stream from Ngv-khü-gko, the Lv-ts'o lo canyon
*487 debouching east into the Yangtze.

Descending the spur of Hua-bi-gkv over a zigzag trail, we enter the canyon of Lv-ts'o lo. The trail is rocky to a degree and seems endless; the stream-bed is dry in stretches, the water appearing and disappearing underground until we come to an old temple once dedicated to the Lung Wang 龍王 (Dragon King) at 7,500 feet elevation, where a clear spring gushes forth from beneath the path. Here is situated one of the few Na-khi hamlets in this valley. The people are very poor, for the terraces on which they grow their maize are rocky and few in number. The new trail coming from T'ai-tzu Kuan joins here the old Lv-ts'o lo caravan route. Crossing the stream we ascend the narrow trail and follow along the opposite walls of the canyon to a bluff, 8,100 feet elevation, overlooking the Yangtze, which flows here at 4,900 feet above sea level. Opposite the mouth of Lv-ts'o lo canyon, over the river in Yung-ning territory, debouches the Ba-cha-dji-ki canyon from Wua-ha Mountain, 16,000 feet in height, a high limestone range which forms the eastern wall of the Yangtze valley.

From the bluff the trail descends over the open scrub covered rocky slope, through the scattered hamlet of Feng-k'o (H-M., Fong kou). It leads through hamlets and fields and is the most exasperating in this part of Yün-nan. The fields are terraced and supported by rock walls, encroaching on the path so as not to sacrifice an inch of soil, thus reducing it to a mere strip resembling a ditch. In addition all the rocks of the fields are thrown on the trail, which also serves as an irrigation ditch. Nature has taken possession of the rock walls in the form of rose-bushes and other shrubbery, which are, of course, never cut nor even trimmed, and thus hide the narrow track. The Na-khi caravans, brushing constantly against the bushes, keep the trail more or less open, but nevertheless, one's garments suffer considerably from the thorns of the roses, unless one rides a tall horse. The traffic is the steam-roller. Senselessly the trail leads up and down past every hut. Even should such a shanty be situated on the top of a hill, the path must climb up to it, only to descend again to the level whence it started.

Ere reaching the banks of the Yangtze, the trail descends into a valley in which most of the scattered hamlets of Feng-k'o are situated, a stream is crossed over a stone-bridge, and a short distance beyond we descend over arid, red, gravelly slopes, bearing a typical xerophytic vegetation such as *Pistacia weinmannifolia*, Dalbergia, *Osteomeles Schwerinae*, *Dodonaea viscosa*, legumes, *Terminalia micans*, *Phyllanthus emblica*, *Sapindus Delavayi*, etc. Most of the water in this arid waste is brackish. Close to the river bank, on a small terrace, a few houses form the hamlet called Ndzu-dü (H-M., Tsatue).

505 Near a pyramidal rocky hill which juts into the Yangtze, forming a little bay to the south, is the river ferry. It is here that Kublai Khan must have crossed with his army. There are other ferries to the south below La-bpu, but there he could not have crossed as it is recorded that he met the Mo-so first at the T'ai-tzu Kuan 太子關 (*see* pp. 97, 236). The ferry-boat, a leaky affair, holds five mules and a few loads, besides two or three passengers. The current is swift and in the summer crossing is very dangerous owing to a large oblong

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rock which is then submerged. The ferrymen are Zhĕr-khi, a clan of the Na-khi (PLATE 101), but the man in charge of the ferry is a Chinese who buys his position from the Li-chiang magistrate. He hires the rowers and charges a certain amount, as 10 to 20 cents silver per animal, and a nickel per man. Of this a certain amount must be given to the yamen at Li-chiang. The magistrate has the right to remove him and can give the position to anyone who is willing to pay more for it. Thus he is never certain, although he has purchased the position, how long he may remain in it. The natives of Yung-ning pay half of what the Li-chiang people pay, and the Yung-ning chief also secures a portion of the ferry money. Often the ferry renter is unable to keep the position on account of losses, for the magistrate must receive a certain amount per annum; if there is little traffic on account of robbers, the income is next to nothing — yet the magistrate must have his due. The boat is nearly always built by the renter, who must also keep up repairs: that these are hardly ever made is indicated by the leaky condition of the boat. Infrequently the magistrate contributes something towards the building of the boat — a crude affair at best (PLATE 102).

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## 4. THE YANGTZE BETWEEN LV-TS'O LO AND LA-BPU

The Yangtze between Lv-ts'o lo (Lu-tzu-lou 鹿子樓) and La-bpu is approachable only by Lv-ts'o lo. One must, if coming from Feng-k'o, ascend the Lv-ts'o lo gorge to the bridge over the stream, as below, where the gorge debouches into the Yangtze, it is impassable, forming a deep, winding canyon with vertical walls. A narrow trail leads for ten li along the southern flanks of Lv-ts'o lo gorge to a bluff over the Yangtze, whence a full view can be had of the rock gate known as Gv-ho-gu (the Ngv-ḳhū gko of the Li-chiang Na-khī), which separates La-bpu from Lv-ts'o lo. Through this the Yangtze flows again south into the heart of Yün-nan to within two stages of Ta-li Lake, 78 li as the crow flies. The western flank of the Yangtze valley, south of Lv-ts'o lo, slope more gently and are partly cultivated. The eastern bank in Yung-ning territory is precipitous, culminating in the bulky limestone mass of the Wua-ha Mountain (Ta-yao Shan 大耀山), a southern extension of which forms the Dzoaṇ-p'u peaks; its precipitous slopes are cut up into steep and deep ravines, like those of Ba-cha-dji-ki and Nda-shi (these are Hli-khiṇ, or Yung-ning, names).

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Looking down-stream from across river above Law-k'a-khi-llū (H-M., La-kalo), in Yung-ning, the western face of the gorge appears as one continuous, massive rock wall, though it is formed by two projecting spurs: the first is narrower and separated by a deep ravine with vertical walls, the second is a broad rock wall washed by the Yangtze (PLATE 103). Through the rock gate is visible the La-bpu peak (La-bpu mbu) already described. The gorge is the dividing line between La-pao and Feng-k'o districts. The scenery is awe-inspiring and really magnificent, yet less impressive than the gorge of 'A-ts'aṇ-gko.

Between the mouth of the Lv-ts'o lo and the Gv-ho-gu gorge, in Li-chiang territory, are situated two Na-khi hamlets, the lower one is called Lo-k'o, the upper one, Gkyi-da-gko. The women of these villages dress like their sisters

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[291] The women of these villages dress like their sisters
*133 in Yung-ning; they wear pleated skirts and immense dark blue, cotton cloth
*137 turbans. Beyond the last village the valley walls are steep and forested with
*487 pine (*Pinus yünnanensis*). Across the spur west of Gv-ho-gu gorge is a pass known to the Chinese as Hsüeh-shan-men Kuan 雪山門關 (the Snow Mountain Gate Pass), and also by the name of T'ai-tzu Kuan (Pass of the heir apparent).[1]

On the cliffs of the T'ai-tzu Kuan north of La-bpu, a member of the Mu family engraved ten Chinese characters which, tradition relates, an Imperial heir apparent had visited. On the Chinese map it is given as being along the main trail north of Pao-shan, written 保山, which is not correct, for La-bpu (La-pao 剌寶) was the ancient Pao-shan 寶山.

Between Lo-k'o and Gkyi-da-gko there is a deep ravine which the trail skirts; back of the latter village the trail ascends to the top of the first lateral spur which forms the western wall of Gv-ho-gu, elevation 8,000 feet. Between this spur and a much higher one to the south, is a terrific ravine called Gko-mä; its walls are vertical and it is here that the Na-khi mine saltpetre. Dense forests of oaks, pines and junipers fill the ravine (PLATE 104). The trail leading from T'ai-tzu Kuan to where it joins the old trail through the Lv-ts'o lo gorge, follows the lower one but high above it and the villages mentioned.

Opposite Lv-ts'o lo in the ravine of Ba-cha-dji-ki is the Hli-khin village of Mi-ndu-wùa, situated on a terrace; the second, smaller ravine to the south is called Nda-shi, after the lone village in the valley.

The region on the Yung-ning side between Law-k'a-khi-llü and Nda-shi is known as Ts'o-lo-wu. Here, half-way up the slopes of the mountain, which is crowned by the limestone crags of Wua-ha (H-M., Alo), used to be a small lake, called in Chinese Tang-tsung Ch'ih 當宗池. This pond has been drained for many years, but it is still marked very prominently, and much too large, on the Chinese military map of 1928.

### 5. SHANG FENG-K'O IN THE APEX OF THE LOOP

*133 Shang Feng-k'o (Upper Feng-k'o) is at the extremity of the Yangtze loop.
*137 It can be reached by two different trails, one which leads from Feng-k'o along
*487 the banks of the Yangtze, and the other over the mountains along the central
505 spur or backbone which fills the Yangtze loop. We will follow the latter trail from Shang Feng-k'o proper to where it strikes the lower or Feng-k'o path.

There are several ferries over the Yangtze on the eastern stretch of the loop;

[1] The Li-chiang records state that "The Hsüeh-shan-men Kuan is 260 li from Li-chiang, and the pass is north-east of the ancient Pao-shan chou. During the T'ang dynasty, it was the border between the T'u-fan and the Mo-so. It is as of Heaven created, a dangerous precipice. The younger brother of the Emperor of the Yüan dynasty, namely Hu-pi-lieh, when on his way to attack Ta-li, coming from the T'u-fan country, fought the Mo-so at this pass; hence the pass is known to this day as T'ai-tzu Kuan (Pass of the heir apparent)." From this I am convinced that Hu-pi-lieh (Kublai Khan) crossed the Yangtze at P'u-dgyu in Yung-ning territory to the present Feng-k'o; in order to reach T'ai-tzu Kuan, or the Hsüeh-shan-men Kuan, the Yangtze must be crossed at Feng-k'o. The pass was the border between the T'u-fan and the Mo-so, the latter lived south of the pass where he attacked them; the first Mo-so settlement coming from T'u-fan country was Pao-shan, the present La-pao. As it is stated that after having crossed the Yangtze, Kublai passed through various villages which now comprise La-pao (La-bpu), he could not have crossed but at Feng-k'o and passing first through Hsüeh-shan-men Kuan entered La-pao. The *Tien-hsi* gives an older name for this pass, viz., Yüeh-mieh-ken Kuan 越猛垦關.

[2] [Lo-k'o and Gkyi-da-gko -- Analyst]

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the most important is at Feng-k'o, the next important one at Chiang-wai further south, and the third at, or near T'o-lä-tsu. A fourth ferry, which serves the Chung-tien and Gangkar-ling country, and the people of O-yü on the Zho Chhu or Shu gyi in Mu-li (Mi-li) country, is at the very apex of the loop, at Shang Feng-k'o. There are several other ferries, that is, improvised rafts, made of inflated goatskins. Unless goods are to be transported they are rarely used; people who merely decide to cross, usually tie their scanty clothing around their head, fasten a goatskin in front of themselves, inflate it, jump in the river and swim across. I have known of Na-khi swimmers, from the southern border of Yung-ning called north to Yung-ning lamasery by their chiefs, to return home by simply tying a goatskin or two around their bodies, inflating them, jumping into the river, and allowing themselves to be carried by the current through rapids and narrows till they reached their hamlets, in preference to walking back over a long rocky trail. This entails, of course, an expert knowledge of the river, otherwise one would be dashed to pieces against the rocks.

The Yangtze is called Gi-dji by the Yung-ning people, and Ha-yi-bi, or La-lĕr Ha-yi-bi, or simply Yi-bi (River), by the Li-chiang Na-khi.

The largest tributary of the Yangtze in this region is the Zho Chhu [8] (Hsi-fan), or Shu gyi (Na-khi), the Chinese Wu-liang Ho 無量河; its lower part is in Yün-nan, in the territory of Yung-ning. North of Yu-mi the Zho Chhu is in Mu-li territory (Land of the Yellow Lamas), up to the cantilever bridge (elevation 8,820 feet) at the village of Wua-shi which forms the border between the Gangkar-ling Bun-dzi-bese clan [9] and Mu-li. Handel-Mazzetti calls the river Dou-chu, which is incorrect; there is a Tong Chhu [sTong-chhu] [10] which is an affluent of the Zho Chhu, it derives its name from the district of the Tonyi-bese Tibetan clan through whose territory it flows, south-west of the Gangkar-ling mountain system. The Zho Chhu does not have its source in the Gangkar-ling mountains, as Kingdon Ward surmised, but near Na-wu, 11 days' journey north of Mu-li.

Major Davies gives the source of a river at Na-bu (Na-wu) which he believed to flow into the Li-t'ang River. This is nothing else than the source of the Zho Chhu, which however flows into the Yangtze at Shang Feng-k'o (PLATE 105). It receives a very important affluent, the Gang-kha Chhu (Gangs-kha chhu), from the glaciers of the northern slopes of Mount Chhana-dorje of the Gangkar-ling peaks. South of the Gang-kha Chhu it receives three affluents worth mentioning, namely the Tong Chhu, Lo-nda, and Chwua-

[8] ཆུ་ཆུ

[9] The Gang-kha-ling (Gangs-kha-gling གངས་ཁ་གླིང་ or Gangs-dkar-gling གངས་དཀར་གླིང་) territory is ruled by a chief who used to be subject to the T'u-ssu of Li-t'ang 裏塘土司. His name is Tshe-rab-dpon ཚེ་རབ་དཔོན (pronounced Tshe-rab-pön). Since the Li-t'ang T'u-ssu has been abolished the clans are under nobody's jurisdiction and are outlaws or a law unto themselves. Tshe-rab-pön has under him three sub-chiefs, each one controlling a clan. They are known as Rim-bhal-sras རིམ་བལ་སྲས (pronounced Rim-bese), hBum-rdzi-bhal-sras འབུམ་རྩི་བལ་སྲས (Bun-dzi-bese) and sTong-chhen-bhal-sras སྟོང་ཆེན་བལ་སྲས (Tong-chhen, better known as Tonyi-bese).

[10] སྟོང་ཆུ

2: Rock K-5 (1934- ) 1947 AF16 Southwest China AF16



*133 dzu. The latter has its source in a mountain called Dza-bo ran (*ran* in Hsi-fan *137 is a pass) which forms the Hsi-k'ang — Yün-nan, that is, Mu-li — Chung-*487 tien, border. Kingdon Ward calls the river the Shu-lo (a Na-khi name), but this is the name of the valley: *shu* = iron, *lo* = valley; the river is called Shu gyi (Iron water). Iron is mined in large quantities, especially near O-yü, where the best iron ore in the Zho Chhu valley is obtained.

The little hamlet of Shang Feng-k'o is situated directly opposite the mouth of the Zho Chhu (Shu gyi) and consists of a few houses only. The place or region is also called San-chiang-k'ou (Mouths of three rivers); the three streams which debouch into the Yangtze near the apex of the loop, are the Zho Chhu from the north, the Luë-dzu from the east, and the Ha-lo from the south or within the loop.

[505] In former days there was a ferry where the Zho Chhu debouches into the Yangtze, but now it plies a little north of the mouth of Luë-dzu valley.

Opposite Luë-dzu, a valley called Law-k'an debouches from the Li-chiang side. It is here that a trail leads up into the hills to the central spur.

From the banks of the Yangtze the trail ascends the grass-covered slopes up the valley of Law-k'an past several hamlets where maize and millet is cultivated, and thence to a pine-covered spur at an elevation of 10,100 feet. The trees are mainly yellow pine and oaks (*Quercus semicarpifolia*). The ridges are dry and gravelly; in one place the rocks are volcanic. The trail now joins the main broad spur, the backbone of the mountain mass in the loop. Here the Yangtze can be seen to both sides. In the west the river makes two sharp bends (PLATE 106) ere reaching Shang Feng-k'o. Beyond, a grey scree mountain rises into the turquoise-blue sky: it is part of the Gkü-dü range, also known to the Na-khi as Gkü-dü gkü-tsu-tsu. To the east, seen from 9,500 feet elevation, the Yangtze makes a sharp bend between Feng-k'o and Luë-dzu valley (PLATE 107). Further south the gorges to the west become visible, the river entering terrific canyons.

Our trail continues on the top of the broad central spur through beautiful pine forest; I consider this the best trail to Yung-ning as one avoids the long hot journey up the dry Yangtze valley. The heat in the Yangtze valley is at all seasons intense, especially in the spring. There are lovely meadows surrounded by wonderful forest, and excellent camping places, the elevation being 10,000 feet. Here clear brooks flow from the foot of a high mountain overlooking the river. Oak and pine forests cover the spur. The trail skirts many deep ravines, but leads steadily up, along the foot of grey limestone cliffs, to the west. At 10,900 feet there used to be a Lo-lo settlement now forsaken, and the destroyed forests can again claim their own. At 11,400 feet the forest is still composed of pines, but with undergrowth consisting mostly of birches, a rather unusual plant association; at 12,000 feet the trail enters forest composed of larches, spruces, oaks, and birches, with scattered pines, hugging a limestone wall at the head of deep valleys which debouch east into the Yangtze. The scenery is superb, the autumn coloring magnificent, the birches yellow, the sorbus trees crimson, and the maples orange-red. The path leads from one spur to another and their intervening valleys, over gently sloping ground forested with spruces and carpeted with soft moss, and an undergrowth of tall, large-leaved rhododendron trees, Lonicera (honeysuckle), Ribes, and cane-

2: Rock K-5 (1934- ) 1947 AF16 Southwest China AF16

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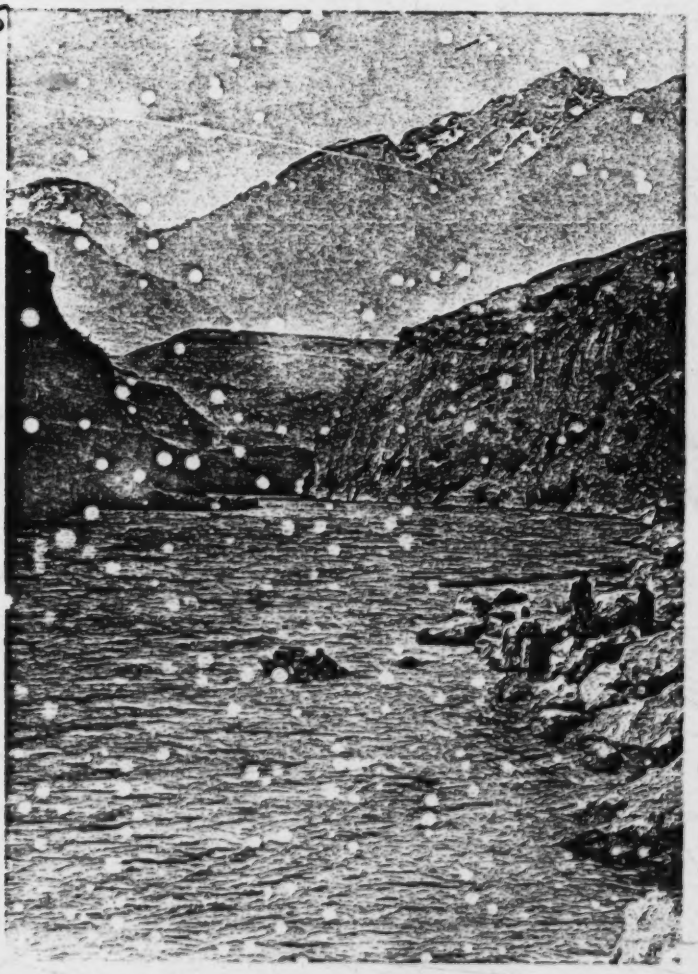

PLATE 142. — A RAFT NEGOTIATING THE YANGTZE

金沙江放排渡具角

The Exit of the Yangtze from the 'A-ts'an-gko gorge. The author's camp equipment is being ferried across from Za-ba to Ta-ku.

[p. 244 F]

2: Rock K-5 (1934- ) 1947 AF16 Southwest China AF16



to buy them for more than 100 dollars silver apiece with 25 rounds of ammunition. In order that they should not fall into the hands of the Lo-lo or Tibetans the rulers of Yung-ning had to buy as their finances allowed. When Ch'en Tsung-pan and his party were in Yung-ning on their way towards Li-chiang to sell their remaining rifles, the Gangkar-ling Tibetans, having learned of their presence there with arms for sale, came post-haste to Yung-ning, followed and overtook them at a village to the south. They then attacked them in order to capture the arms. Ch'en, who had some Ssu-ch'uan soldiers with him, resisted, keeping up a constant fire and using up all the ammunition which was to be sold with the rifles. The Tibetans retreated and finding a Hsiang-ch'eng 鄉城 Tibetan caravan which was returning from Li-chiang, attacked and robbed it. Under such conditions, the poor unarmed peasants have indeed a difficult existence.

From the south there are three approaches to the Ha-pa and Bbĕr-ddĕr territories, but the Yangtze must be crossed no matter where one enters them, coming from Yün-nan. The quickest way to reach the district used to be by way of Ta-ku immediately north of Li-chiang, two stages distant. A ferry plied there, but, since the Tibetan bandits used it to cross over to Li-chiang in 1922, it has been destroyed and there is now no intercourse with Ha-pa, at least not from the Ta-ku side. People do cross on goatskin rafts which are hastily constructed, but the skins are kept on the Chung-tien side, none being available at Ta-ku. Thus to cross from the Ta-ku side, although the easiest approach, is now impossible (1932). This still held good in 1944.

The second best approach, only feasible in the summer, is via the pass called Hsüeh-men-k'an 雪門砍 (Snow gate cut) over the mountain near Bbĕr-ddĕr to the west. The valley which leads to it from the Bbĕr-ddĕr side is called Gyi-na lo (Black water gulch). From the pass a trail leads west to the Yangtze above Ch'iao-t'ou (Bridge head). From autumn to spring the pass is deep in snow, and many have lost their lives in trying to cross in the winter season.

The third and longest and most difficult approach is the one by the Yangtze gorges. When mentioning the Yangtze gorges, those known to the tourists at I-ch'ang 宜昌 come into mind, but let it be said that the latter can never be compared with the gorge the Yangtze has cut for itself through the Li-chiang Snow range. Having always wished to explore the gorge through the Yü-lung Shan, I took this route to Bbĕr-ddĕr, and it is this which I shall describe. Bacot is said to have traversed the gorge, but he says little or next to nothing about it, and mentions it as being 2,000 metres deep. It is much more than that, and 10,000 feet is about right.

### 2. FROM NV-LV-K'Ŏ TO THE MOUTH OF THE YANGTZE GORGE

Nv-lv-k'ŏ (At the foot of the snow range), or Hsüeh-sung-ts'un 雪嵩村[1] as the Chinese call it, is situated at the end of the north-western branch of the

[1] (Hsüeh) Sung is the highest and central peak of the Wu-yo 五嶽 (Five sacred mountains) on which the ancient emperors worshipped Shang-ti (God). The Sung peak lies in Ho-nan fu in the province of Ho-nan, on the watershed between the Yellow and the Han Rivers. As the title of Pei-yo (North sacred mountain) had been bestowed on the Yü-lung Shan, the village lying at its foot was given the name Sung, which also stands for eminent and lofty.

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(rDo-rnga-rong) in Tibetan, meaning Valley of the Stone drum. Wang-chiang Shan is a continuation of Lao-chün Shan 老君山, the latter being quite a distance south-west of Shih-ku.

The Yangtze at the bend is of considerable width — more than 200 yards; on its bank maize is cultivated. Small, grey, sandy islands, covered with grass, dot the river. It is said to be the fifth river in order of length, yet in the quantity of water discharged it is second only to the Amazon, four times as large as the Mississippi, and a hundred times as large as the Nile (GREGORY).

The town of Shih-ku [7] is situated on the very bend of the Yangtze, on the slopes and top of a promontory. Near the town is a sort of ferry consisting of a raft of doubtful safety.

The town consists of over 200 houses. The merchants and a few families are Chinese, the rest Na-khi; the population around Shih-ku is composed of Na-khi, Li-su (力些 or 獠猓) and Lo-lo. The town derives its name Shih-ku (Stone drum) from the large stone drum on the slopes to the north of the town. The stone drum rests on an oblong rock and is truncate at its base. A belief exists that should the drum split, a calamity will befall the country. Oral tradition relates that Chu-ko wu-hou 諸葛武侯 (Chu-ko Liang 諸葛亮) erected the stone drum when coming from the south to attack the T'u-fan.

The drum was erected to guard against the T'u-fan and was thus known as the Chen t'u-fan ku 鎮吐番鼓. At first there was no inscription on the faces or sides of the drum. During the reign of Chia-ching, in the year of

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longed to Yüeh-sui 越巂, which was in the State of Shu, it is believed that the present Shih-ku is identical with the Shih-niu of Shu, the birthplace of Yü.

Legend relates the following: The eldest son of the Yellow Emperor (Huang Ti 黃帝) was Ch'ang I 昌意 who descended from on high and dwelled on the Zo Shui 若水, and became the Chu-hou 諸侯 (Prince). He married a woman of a family from the mountains of Shu; they called her Ch'ang P'u-shih 昌濮氏. There was born Chuan Hsü 顓頊, who for 10 years assisted Shao Hao 少昊 (2598 B.C.) who was the second of the five legendary rulers. Twenty years afterwards he ascended the throne as Emperor (2514 B.C.). The Zo Shui is the present Chin-sha Chiang (Yangtze).

Kun 鯀 (the father of Yü) married a woman of the family Hsin 莘. Her name was Nü Hsi 女嬉. Though of age, she had no illicit offspring.

Hsi went up the Chih Mountain 薏山 and there obtained the *I-i* 薏苡 (*Coix lachrima-jobii*, a grass related to maize) and swallowed it. She felt affected as if she had had intercourse with a man, and became supernaturally pregnant. Her side (under the arm) was cut open and there came forth Yü.

The *Fang-yü chi-yao* 方輿紀要, ch. 24, fol. 27, states, however, that the Shih-niu Shan 石紐山 is one li south of Shih-ch'üan hsien 石泉縣 (this is 215 li south-west of Lung-an fu 龍安府 in north-west Ssu-ch'uan). Yü was born in Shih-niu.

Shih-ku is a long way removed from the Hsi Ch'iang 西羌 country, and it is just a fancy of the compiler of the *Tien-hsi* to declare that Shih-niu and Shih-ku are identical.

The *Li-fan T'ing-chih*, ch. 1, fol. 29b, states that "the Shih-niu Shan is in T'ung-hua-li 通化境. On the top of the mountain a Yü miao 禹廟 has been built. Behind the temple is a rock wall touching heaven. On that wall are engraved the three large characters, 石紐山. Who carved them is not known. Yü was born on Shih-niu Shan, which is in the present Shih-ch'üan hsien. This was the Han dynasty Kuang-jou, 廣柔. Thus the Yün-nan Shih-ku cannot be the Shih-niu of Yü.

[7] Shih-ku is in latitude 26° 50′ and longitude 99° 55′, according to Major H. R. DAVIES (*Yün-nan*, p. 256).

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*487 military map gives Ch'iao-t'ou 橋頭 below San-kai-tzu (Shang-ko-tzu) and
*133 opposite Lä-ndo (Leng-tu), while in reality it is beyond Dsi-gku, which itself
*137 is some distance north of San-kai-tzu.

Between Ssaw-ssaw-gku and Dsi-gku, or Dsi-gkv as the Li-chiang Na-khi pronounce it, are several villages, as Muan-ssu-dzhu (H-M., Musödso), or Mu-ssu-ch'ang 木思場 in Chinese, on the Li-chiang side of the river; and on the east bank, or Chung-tien side, the hamlets of Nda-lä (Ta-lieh 打烈; H-M., Ta-lä), and north of it the village of Ss or Ss(ĕr)-lä (H-M., Sa-lä), and north of this, also on the Chung-tien side of the river, the village of Ch'ou-dzhu (H-M., Tschodjio).

[134] Near Dsi-gku the soil is red, and sandstone and mica abound. Opposite
[241] the large village of Ta-t'ang 大塘 on the Chung-tien side, the mountain-sides slope gently toward the Yangtze. Here along the river cultivation is carried on, while above the fields are dense pine forests, extending into a valley and up the steep mountain slopes on the Li-chiang side. The fields bear crops of millet and maize and, on the slopes above, rice. A large grove of lovely old oaks, through which the trail leads, relieves the monotony of the sandy fields. Here, near the village of Vu-dzhu (H-M., Mudschuo; the Chinese Wu-chu 梧竹), situated on the Chung-tien side, is a long island.

The scenery is weird and lonely, especially where the trail enters groves of Castanopsis, quercus (oaks) and pines; the mountain slopes are steep and huge boulders lie about everywhere. On the opposite side a narrow, dark valley debouches into the Yangtze at the hamlet of Nda-gka-dü. Five li beyond bring us to the village of Ba-lo (Chinese Pa-lo 巴羅) at the mouth of a long, broad valley, almost as broad as that of the Yangtze itself. An iron chain-bridge spans the Ba-lo gyi which issues from the broad valley. It has two branches, the northern one carrying the larger stream; in the southern branch, called Yi-gv lo, are situated about ten villages.

Ba-lo itself is called Ch'iao-t'ou 橋頭 in Chinese (Bridge-head) on account of the iron chain-bridge which spans the Ba-lo gyi. This is, however, not the iron chain-bridge (T'ieh-ch'iao 鐵橋) which figures so largely in all the battles fought between the Na-khi and Tibetans, nor where the Mongols and the Ming soldiers fought when conquering the territory for China. Ba-lo itself is one of the dreariest spots imaginable and compares unfavorably even with villages situated in the lonely Pa-pien Ho 把邊河 valley in the south of Yün-
[505] nan. Altogether three ferries ply across the Yangtze between Shih-ku and Ch'iao-t'ou: one at Shih-ku, where, since my last visit, a crude row-boat, such as is commonly used in this primitive part of the world, has taken the place of the raft; one at Muen-tsü-dtu; and one at Dsi-gkv.

The trail leads over the iron chain-bridge across the Ba-lo gyi,[24] and climbs the slippery rocks on the other side, leading along the steep, rocky bank down to the plain and the village of Muan-fu-k'o (Chu-ko-ling 諸葛嶺).

[24] Ch'iao-t'ou Ho 橋頭河. Its source is over 200 li north-west of Li-chiang, on the south-eastern slopes of the Han-sou Shan. It flows by the guard-station of Ch'iao-t'ou into the Yangtze. The bridge which spans it is called the P'ing-cheng ch'iao 平政橋; it was first built in the second year of Ch'ien-lung (1737) by magistrate Chiang Ch'iao-sun 江喬蓀. It was destroyed by fire in the first moon of the fifth year (1740) and rebuilt by magistrate Kuan Hsüeh-hsüan 管學宣 in the seventh year (1742).

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alluvial slope at an elevation of 5,800 feet. On our arrival the whole village of Chang-ra was assembled in one house where a wedding was taking place. All were celebrating the occasion by getting drunk. From Chang-ra we descend to the Salween which flows swiftly, entering a deep and narrow gorge south of the village. A single rope-bridge spans the river here, used only in the summer, when, owing to the swift current, crossing by dug-out is impossible. Several dug-out canoes were on the bank but only two were serviceable. Seven Lu-tzu, all gloriously drunk, made up the crew; one canoe was large, the other small and as tipsy as the crew (PLATES 191, 192). They rowed up-stream into the center of the current and pounding the sides of the canoe with their long, narrow paddles, gave a few yells and allowed it to drift swiftly with the current, until at a signal they paddled it out again to the other side. Horses and mules must swim across at the side of a large canoe.

The Salween, called in Tibetan rGya-mo-rngol Chhu,[47] flows here in wide curves at an elevation of 5,800 feet. (Our word Salween is said to be derived from the Burmese name of the river, which is Than-lwen.)

*Administrative post of Da-ra and Ch'ang-p'u-t'ung.* — At the hamlet of Chang-thang ཇང་ཐང (Cho-ts'ung 卓從; Shu-lang of the Lu-tzu), on the west bank of the river opposite Chang-ra the trail leads north, high above the river, through buckwheat fields followed by dense woods, to the Tibetan village of Da-ra[48] with its many *mani* pyramids. The houses which are constructed of dried mud have carved window frames and slate roofs.

Beyond Da-ra the river makes a deep and sharp curve, giving the appearance of a tributary entering it, the bend being almost O-shaped. Ten li from Da-ra we strike first the hamlet of Bä-du and then the plain of Ch'ang-p'u-t'ung 長普桐. The trail follows the mountain wall in a wide curve ere reaching the gentle cultivated slopes (PLATE 193).

West of Ch'ang-p'u-t'ung, called Hra-mu-dam by the Lu-tzu, is a huge limestone cliff crowned by forest; here a large valley opens out which makes a bend southward, the stream flowing past the village into the Salween. In this deep valley back of Ch'ang-p'u-t'ung is a high, rocky mountain called Nan-sa-wo, presumably a Lu-tzu name, the slopes and summit of which are covered with myriads of loose, flat rocks; a trail leads up this valley to the Ch'iu Chiang or eastern branch of the Irrawadi. To the north of the village a shorter stream cuts deeply into the alluvial plain or small plateau, thus isolating the little place with its monastery still in ruins since 1905. It was burned to the ground by Chinese soldiers, who were sent to avenge the murder of the Catholic priest and the destruction of the Bahang Mission. The

[47] རྒྱ་མོ་རྔོལ་ཆུ།

[48] Da-ra is the seat of a Chinese official who holds the title of Hsing-cheng wei-yüan 行政委員 (Deputy administrator). The district received recently the name of Kung-shan 貢山 (Tribute mountains). The Chinese deputy magistrate in principle administers also the valley of the Ch'iu Chiang 秋江 which the Tibetans call Chhang-yul ཆང་ཡུལ (Land of beer). The names Chang-thang and Chang-ra are pronounced Chyong-tsong and Chyong-ra by the local people, hence the Chinese transcription.

1 [a Lu-tzu village -- Analyst]

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is called Sä-dji-ma; it was here that a ferry once plied to the Li-chiang side of the river.

*Crossing the Yangtze.* — At the time of my visit in 1929, while returning from an expedition to Mi-nyag Gangs-dkar (Minya Konka) [12] for the National Geographic Society of Washington, D. C., all the ferries over the Yangtze had been smashed on account of the occupation of the Yung-pei and Yung-ning region by military rebels and their horde of soldiers; it was to prevent them from crossing the Yangtze and occupying Li-chiang territory. Under the above circumstances we found it expedient to cross the river as speedily as possible in order to escape the rebels, who were then nearing Yung-ning. The good and friendly Tsung-kuan, the real ruler of Yung-ning, accompanied us to the Yangtze to personally supervise our difficult crossing of that river on inflated goatskins.[13] My entourage was a large one, consisting of many men, mules, horses and loads; the crossing by this primitive method took two days. We followed the river upstream, for the usual crossing at Sä-dji-ma is only suitable for boats. The light goatskin rafts would be quickly carried down to the fierce rapid a short distance from the mouth of Hĕr-dü. We eventually crossed three li higher up at a more placid stretch of the river.

A few words as regards the crossing of the Yangtze. All Zhĕr-khin people are expert swimmers. Twenty-two of them had been called together from the entire Yung-ning — Yangtze bank from as far south as T'o-lä-tsu. They were ready with their goatskins. Each skin was entire and formed a bag, only the neck was open, every other aperture being securely tied. The skin is held over the stomach, lengthwise so that the neck reaches to the mouth. The hind legs of the skin are securely tied with string, and are then passed between the swimmer's groins and tied over his buttocks. The neck of the animal is held in the mouth, and on entering the water the skin is inflated. They bobbed up and down in the swift current like corks, and when caught by a whirlpool they were sucked completely out of sight but soon popped up again. The mules and horses swam across, each man taking one by the reins; the more obstreperous animals needed three men. Often mule and man would disappear, being sucked down by the whirlpools for several seconds. We as well as our belongings were ferried across on inflated goatskin rafts, which consisted of 12 skins tied to sticks. They were much better constructed than the goatskin rafts used on the Yellow River in the Tibetan grasslands. There the rafts could be paddled across by one or two men, but here usually five men had to handle one raft, two pushing and swimming behind, and three, with ropes over their shoulders or holding them in their mouth, pulling and swimming in front. They first pushed the raft along the cliff (Plate 238) until they reached the current, where there was also a whirlpool and where they were carried down-stream at express speed. When a considerable distance down, one would lead, swimming and

[12] མི་ཉག་གངས་དཀར།

[13] *See* J. F. Rock, "The Glories of Minya Konka," in the *National Geographic Magazine*, Vol. LVIII No. 4 (1930) Pl. XV.

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pulling with all his might making for the other shore. Still they were carried down-stream until they struck another eddy, where they swam ashore. The ordeal was now to carry the raft back for a mile over the rocks on the opposite bank, inflate the skins, refasten the strings and plunge again into the water, pulling for the starting point. Although the atmosphere was balmy, the water was like ice, and the poor men, stark naked as they were, shivered visibly. It was a curious sight to see them coming back sitting in the water like corks, their bronze-colored bodies glistening in the sunlight. After two days of strenuous work we reached the other side of the Yangtze without the loss of a thing, save a mule who fell over the cliff into the river.

*San-chiang-k'ou.* — From the mouth of Hĕr-dü the trail leads over an impossible terrain along the cliffs; it is exceedingly narrow and the slopes down into the Yangtze next to vertical. Projecting rocks and boulders caused one of our mules to be pushed over the precipice, breaking his back. By an improvised trail down a talus slope we descended to the Yangtze. The heat is stifling in these arid canyons. From here it is 16 li to the junction of the Wu-liang Ho and the Yangtze (PLATE 105). This stretch is also called Zho Chhu or Shu gyi (dji) by the aborigines, who consider apparently the real Wu-liang Ho an affluent of the Zho Chhu. Opposite to where the Wu-liang Ho debouches into the Yangtze, on the Li-chiang side, is the small hamlet of Shang Feng-k'o (Upper Feng-k'o). Here besides the Wu-liang Ho two other streams empty into the Yangtze, the Ha-lo dji (Ha-lo Stream) from the Li-chiang side, and the Hĕr-dü below the Wu-liang Ho on the Yung-ning side, hence the name of this region, San-chiang-k'ou 三江口 (Mouths of three rivers).

*Hla-mo-dzu Mountain.* — On the right or western bank of the Zho Chhu and north of the Yangtze is a mountain called Hla-mo-dzu (H-M., Lamatzo) a spur of which forms the Yangtze valley wall and separates a stream from the river, namely the Chwua-dzu dji which flows into the Zho Chhu not far above its junction with the Yangtze.

Hla-mo-dzu is the border between the Hsi-k'ang — Mu-lĭ, and Yün-nan — Chung-tien districts. Hsi-k'ang extends to the bank of the Yangtze west of the Wu-liang Ho, and to the summit of Mt. Hla-mo-dzu. Handel-Mazetti's map is here wrong, as he gives the Mu-li border farther north, and makes Hla-mo-dzu and a considerable stretch to the north of it, Yün-nan territory.

*O-yü district.* — On the banks of the Zho Chhu in Yung-ning territory are situated the hamlets of Yu-mi, Shu-dtü, Bpo-lo, the Chinese Po-lo 波羅, (H-M., Polo) and Zo-wua. They are inhabited by the Zhĕr-khin, a tribe related to the Na-khi and Hli-khin. Yu-mi is on the border between Yung-ning and Mu-li territory. The first village in the latter is Dze-ngu (H-M., Dsengo), others are Dshe-pu and Gya-pu — all inhabited by Zhĕr-khin. The large village of O-yü, Wo-ya (窩丫) in Chinese, farther up the Zho Chhu valley is inhabited by Li-chiang Na-khi, the descendants of former Na-khi soldiers who guarded that region in the days of the Ming dynasty during the rule of Mu Tseng (1587–1646) (PLATE 239). The famous gold-

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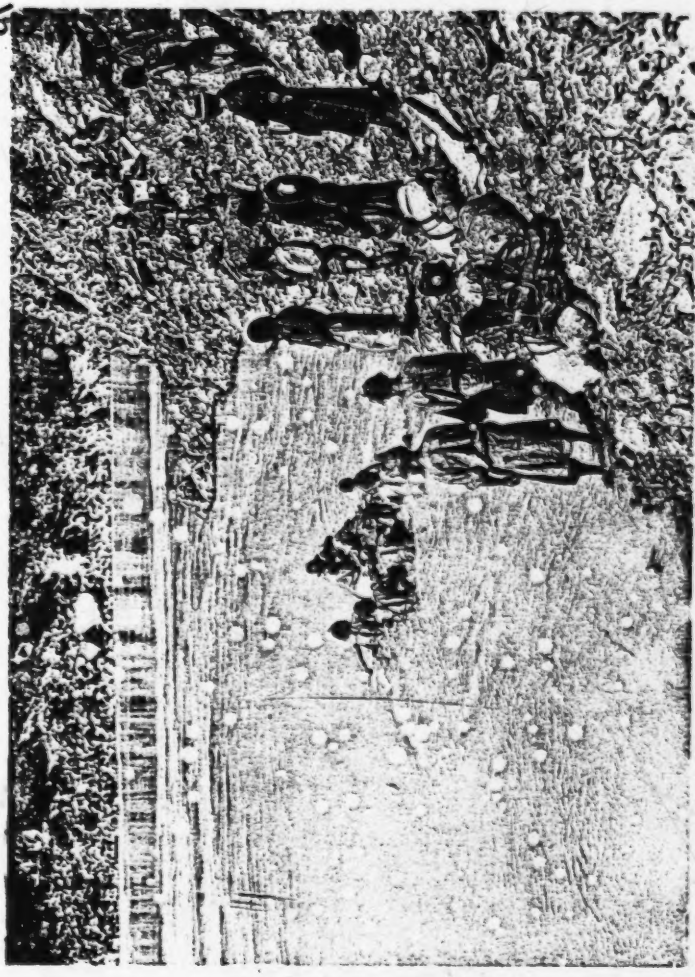

(Courtesy Nat. Geogr. Soc.)

PLATE 238. — CROSSING THE YANGTZE NEAR THE APEX OF THE LOOP

長江彎口附近渡河之外隊員

It took the expedition two days to ferry its entourage and belongings from Yung-ning to the Li-chiang side of the river. More than twenty Zhêr-khin swimmers were engaged for the purpose.

[p. 426 N]

2: Rock K-5 (1934- ) 1947 AF16 Southwest China AF16
505

[7-458-p.]



(Courtesy Nat. Geogr. Soc.)

PLATE 252. — LANDING ON THE WEST SHORE OF THE ISLAND OF NYO-RO-P'U

木 里 木 惹 烏 西 岸

The lake is alive with fish, some of them poisonous. Pine trees have been sunk around the island to prevent landing of enemies. The village of Ta-lo-shui in middle distance.

2: Rock K-5 (1934- ) 1947 AF16 Southwest Ch AF16

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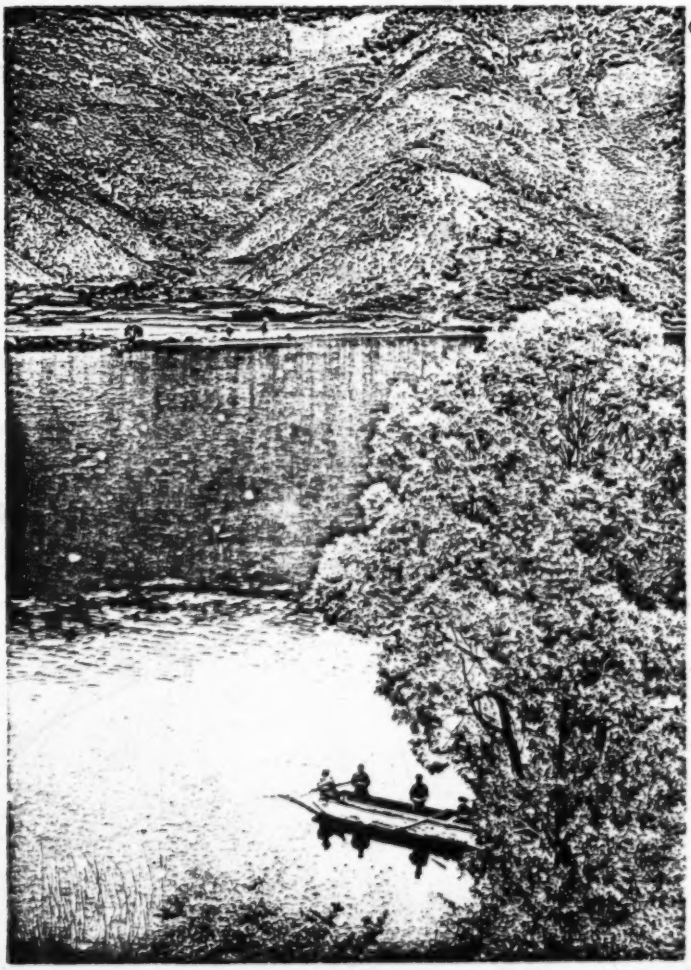

(*Courtesy Nat. Geogr. Soc.*)

PLATE 255. — VIEW FROM THE ISLAND OF A-NA-WA

阿那臥本寺對岸之景

A-na-wa Island belongs to the Lama Kingdom of Mu-li as does the shore opposite visible in the picture. Willow tree in foreground.

[p. 458-0]

5: Davies G-5 (1894-1900) 1909 AF16 Southwest China AF16



000 the naturalist in a country which includes perpetual snows, temperate plateaus, and tropical forests.

Some of these subjects are touched on in the account of journeys through the province which forms the main part of this volume. But in the next few chapters it is with the question of railway communication with Yün-nan that I propose to deal.

The shape and size of the province can best be seen by a reference to the map which will be found in the pocket of the cover at the end of this book. Its position with reference to other countries and provinces can also be seen on the small inset map which accompanies this.

505 Yün-nan is not in itself a poor country, but it suffers from want of communications. The mountainous nature of the province makes the large rivers so full of rapids and boulders that they cannot be navigated, and the roads so difficult that quick land travelling is also impossible. There is no river in the interior of Yün-nan that is of any practical use for boats, much less for steamers, while the roads are merely mountain paths fit for no transport but pack mules and ponies. Moreover the distances from sea ports and even from navigable rivers are very great.

There are four main routes by which goods can reach Yün-nan.

(1) Up the Irrawaddy by steamer to Bhamo (lat. 24° 15′, long. 97° 15′) in the north of Burma, two days from the Yün-nan frontier.

(2) Through Tong-king by rail, from Haiphong to Lao-kai (lat. 22° 30′, long. 103° 57′) which is on the border of Yün-nan. This line is now being carried on by the French through Mêng-tzŭ to Yün-nan Fu and will soon be opened to Mêng-tzù.

(3) Up the West River from Canton by steamer and boat to Pai-sê T'ing[1] (lat. 23° 55′, long. 106°) in Kuang-hsi province, one day from the border of Yün-nan.

(4) Up the Yangtze by steamer to I-ch'ang and thence by boat to Sui Fu (lat. 28° 45′, long. 104° 35′), three days from the Yün-nan boundary.

Let us now take two places—Yün-nan Fu, the capital of the province (lat. 25°, long. 102° 45′), and Hsia-kuan near

[1] Also pronounced Pê-sê or Pe-sê.

S: Davies G-6 (1894-1900) 1909 AF16 Southwest China AF16



505 Ta-li Fu, the centre of the richest part of Yün-nan (lat. 25° 35′, long. 100° 10′), and see how far they are situated from the nearest navigable river.

Yün-nan Fu is 505 miles from Bhamo, 240 miles from Lao-kai, 355 miles from Pai-sê T'ing, and 398 miles from Sui Fu.

Hsia-kuan is 280 miles from Bhamo, 467 miles from Lao-kai, 575 miles from Pai-sê T'ing, and 618 miles from Sui Fu.

Over these distances it must be remembered everything has to be carried on the backs of animals or men.

Moreover the four places to which navigation is possible by these four different river routes are of themselves quite unimportant. All merchandise from abroad has naturally to come from the sea ports, and the length of time occupied in carriage from the sea ports adds to the inaccessibility of Yün-nan to foreign goods.

505 497 Lao-kai, 1½ days by train from Haiphong is the best off in this respect. Bhamo comes next in point of nearness to the sea, being three days from Rangoon by train and steamer.

Pai-sê T'ing and Sui Fu are both situated at a great distance from the sea and the long up-river journey takes roughly speaking quite a month and a half from Canton and Shanghai respectively.

Taking again the two towns of Yün-nan Fu and Hsia-kuan and measuring the distance roughly in time we find that Yün-nan Fu is 39 to 46 days from Rangoon, 16 days from Haiphong, 67 days from Canton, and 70 days from Shanghai. Hsia-kuan is 24 to 31 days from Rangoon, 28 days from Haiphong, 82 days from Canton, and 85 days from Shanghai.

Here then is a province in which long distances and difficult transport make any large trade at present impossible. It is only by railways that the country can be developed. Unfortunately the same mountains which make the rivers unnavigable and the roads impassable for wheels, also render the construction of railways extremely difficult.

5: Davies G-5 (1894-1900) 1909 AF16 Southwest China AF16



•505 133 The Taping is navigable for boats from Manwaing to the capital of Möng Na which lies some thirty miles higher up, and a certain amount of cotton and other goods is carried by water over this short bit of river. Below Manwaing it passes through the Kachin Hills and runs in a gorge°full of rapids which entirely preclude the idea of navigation. From Myothit down to its junction with the Irrawaddy, the Taping is again navigable for boats, and even small steamers can reach Myothit when the water is high.

131 At Manwaing the river runs though a large well-cultivated plain full of villages. Its length is quite 30 miles and it averages six miles across. It is divided into two Shan states, Möng Na (Kan-ai) on the left bank of the Taping, and San-ta (Chan-ta) on the right bank. But the actual village of Manwaing, with five other villages around it, is an isolated bit of territory belonging to the sawbwa of Möng Ti (Nan-tien), whose state lies 40 miles higher up, on the Nam Ti, the eastern branch of the Taping.

The origin of this arrangement we learnt from the San-ta sawbwa, who told us that in former times much of the western end of the plain was deserted for fear of incursions from the Burmese, and grants of land were offered by the Chinese Government to any chief who would send some of his subjects to establish themselves there. The offer was taken up by the Möng Ti sawbwa of that period, and his descendants still possess this little piece of land surrounded by San-ta territory.

361 The village contains 100 houses inhabited by Chinamen, is filthily dirty, full of pigs, and smells horribly, a most disagreeable contrast to the clean Shan villages round it.

712 At the eastern end of the place is a large salt depot where we were lodged. At the western end was a mud fort, garrisoned by 200 men of the Trade Protection Levy. These troops were paid out of the dues exacted from the Chinese traders, and they thus cost the Government nothing. In return for these dues, the safety of the trading caravans was guaranteed while passing through the Kachin Hills which lie between Manwaing and the Burmese border. Anything dacoited on the road was made up to them by the

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764 there are enormous tracts of country taken up by graves. In Yün-nan they are usually along the foot of the hills in ground which lies too high to be irrigated and cultivated.

797 On arriving at the town I went to the house of Mr Smith of the China Inland Mission, who very kindly put me up. The European population of Tali consisted of Mr and Mrs Smith and their children, two missionary ladies who lived with them, and M. Leguilcher, a French priest who had been some 40 years in the province.

361 Ta-li is built at a height of 6,900 feet near the foot of the hills which rise up to about 14,000 feet on the west, while a mile away to the east is the Ta-li lake, the official name [133] of which is Erh Hai. This lake is a fine piece of water 30 miles long and from three to seven miles wide, bounded on the east by low, bare, reddish coloured hills. It is • [505] full of fish and is navigated a good deal by small sailing boats, carrying passengers and cargo from one part of the plain to another. The origin of the name Tali I imagine to be the Shan words *ta li* meaning *good ferry*. This is only a guess on my part, but as Shans almost certainly once inhabited this plain and as there is still a ferry across the lake near the town this derivation seems probable.

The town is surrounded by the usual wall, which in this case is built of stone, and the population of the place is perhaps 30,000. The people in the town are Chinese with a good many Panthays among them, but the majority of the inhabitants of the villages belong to an aboriginal tribe who call themselves Pê-tsö, but whom the Chinese know as Ming-chia. These people retain their own language, and many of them can barely speak Chinese. Their women do not as a rule bind their feet, but in most respects they now conform to Chinese customs. They seem a quiet, peaceable, hardworking people, and in the winter some of them find their way as far as Burma in search of work.

316 One of the chief industries of Ta-li is the quarrying of marble in the Ts'ang Shan range. The stone is white mixed with black and various shades of grey, brown, green, yellow, and red. It is polished and worked up into representations of scenery which they say are natural, though I have heard this doubted, and it is possible that they sometimes use some stain to help the natural colours.

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000 Mr and Mrs Stevenson, and some other members of the China Inland Mission, who most kindly gave us much assistance in many ways. We were also fortunate enough to meet Mr Archibald Colquhoun, who has travelled much in China and other countries of the Far East, and had now come through Kuei-chou from the Yangtze and was on his way down to Tong-king. Mr Jensen, the Superintendent of Telegraphs, was away inspecting the line when we arrived, but soon afterwards came in. It was a great pleasure to renew acquaintance with him.

Our quarters at the inn were anything but pleasant, as the whole place smelt abominably, so Mr Stevenson kindly arranged that on Mr Colquhoun's departure we should go into the quarters he was occupying—a very nice little house in a small garden where we were free from all noise.

361 The town of Yün-nan Fu is by far the largest in the province. It is surrounded by a fine brick wall, 30 feet high, and measuring about 4½ miles round. As usual in Chinese cities, a very large part of the population live in the suburbs, which extend to a considerable distance round three sides of the town. I should estimate the population, including suburbs, to be about 80,000, but this is not much more than a guess and I will not guarantee its accuracy.

The plain extends some 35 miles to the south and contains several other towns, but a large part of it is • 505 taken up by the K'un-yang Lake. There is a good deal of navigation by large sailing-boats on this lake, both for the conveyance of passengers and cargo, and by means of a canal things can be brought right up to the west gate of the city.

719 Mr Jensen took us one day to see the arsenal. This is in charge of Chinamen, who have learnt their work from Europeans at Nanking or Shanghai. They make Krupp guns, Nordenfeldts, and rifles and cartridges. The machinery was worked by steam, but they had no steam hammers, so that the work is not likely to be first-rate. What they were making principally at the time of our visit was an enormously heavy rifle, between six and seven feet long, for two men to fire. The man in front rests it on his shoulder while the man behind fires it. These weapons, they explained to us, are meant to defend the city walls.

316 Lake Wei-ning

the chief importance of Tung-ch'uan lies in its mines. I had not time to visit any of these, except those at Kung-shan, but there are several productive copper mines in the district.

132 The height of the town I made 7,250 feet. It is a cold place, with a climate more cloudy and rainy than the parts of Yün-nan lying further to the south or west of it.

000 My route from here on to Yün-nan Fu took me along the main road which connects the Yangtze at Sui Fu with the capital of Yün-nan. I was here again out of unexplored country, as Doudart de Lagrée, Baber and others, not to mention many missionaries, had travelled the road before me. I still kept up the survey as no very satisfactory maps had been made of this country.

Turning off from the Tung-ch'uan plain near its western end, our road led us up the Yi-li Ho by a narrow valley

•505 with hills rising to 9000 feet on either side. This river is 30 or 40 yards wide and is fordable in many places, but is deep enough to be navigated by boats which bring down timber and firewood to supply Tung-ch'uan.

000 Up this valley we marched for two days and then ascended very steeply on to a ridge and along it, the highest point reached being 9,300 feet. To the north-west a long distance off two very high peaks were visible which I estimated at 14,000 feet. We had now got on to a bare plateau country with considerable stretches of flat ground and small hills rising 300 to 500 feet out of it. We slept on the 5th May in the large temple of the village of Lai-t'ou-p'o at 8,500 feet.

241 The next day we continued our march over the same plateau country. Villages are scarce here, and there is very little cultivation owing to lack of water. At the end of this march of 18 miles the road descends to Hsiao-lung-t'an which is near a small tributary of the Yangtze.

On the 7th after descending to Kung-shan, our road led us up a narrow cultivated valley, ending with a slight ascent

137 to Liu-shu-ho. The country here is more wooded: the hills are covered with firs, and I pitched my tent in a grove of chestnut trees.

407 I saw a curious rice husking machine here. It consisted of a wheel in an upright position which wheeled round and

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439 chester product and is rapidly supplanting the latter in western China.

The height of Mêng-tzŭ I made about 4,700 feet, and the climate is pleasantly cool. The inhabitants of the surrounding country belong principally to the P'u-la and other tribes, speaking dialects of the Lo-lo type.

133 After spending two very pleasant days here, I started for the Red River, taking three days to do the 30 miles which separate Mêng-tzŭ from Man-hao. The country passed through is curious, consisting chiefly of a mass of small basins with no outlet for the water. These "devil's punch-bowls" are characteristic of a great part of the eastern and south-eastern parts of Yün-nan.

485 Another curious and unpleasant feature of the road from Mêng-tzŭ to Man-hao is the entire absence of any sort of inn accommodation for men. There are large stables for mules at the recognised halting places, but no provision is apparently considered necessary for human beings who are so ill advised as to take a road which leads into countries outside the borders of the Middle Kingdom.

000 As it rained on and off, I had to sleep beside my mules on the first night, and on the second to squeeze into an extremely small temple already occupied by a tax collector and his clerk. The country passed through is very poor and thinly populated. The village of Yao-t'ou, where I slept my second night, is considered too unhealthy to live in by the Yün-nanese, and is inhabited by Cantonese who have found their way there through Tong-king. Its height is over 4000 feet, but it is placed in a narrow valley much shut in by hills, which perhaps accounts for its bad reputation. The name Yao-t'ou means "shake head," and is said to have been given to it because everyone who sees it shakes his head in disapproval.

From here, after a little up hill, a very steep descent in pouring rain brought us down to the Red River at Man-hao at a height of 600 feet. The village contains 100 houses,

• 505 inhabited by Cantonese Chinamen and Shans. Small boats can go a considerable distance further up the river, but Man-hao is the limit for large boats and may be considered as practically the head of navigation.

Mr Spinney had kindly arranged about a boat, so I was

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[501] 505 able to leave Man-hao the same day. The boats are some 50 feet long and 10 feet wide across the middle. They are said to carry a load of 10,000 lbs. I found plenty of room in one for myself and five followers and our baggage, besides the six men who formed the crew. The boat is got along by rowing, the crew having occasional "easies" during which we drifted down at a good pace, as the current is strong.

Three and a half hours' rowing brought us to the village of Hsin-kai, where we halted for the night, as boats cannot run after dark owing to the rapids. It poured with rain all the night through, and the matting roof of the boat was by no means equal to keeping out such a torrent.

Starting again at dawn the next day we went on at a good pace, negotiating several rapids, in one of which the boat struck a rock, but without doing any damage. The first sign of the French was the tricolor flying over a small fort on the right bank. This was Lung-po, the frontier post in this direction. From here down to Lao-kai the Red River is the boundary between Tong-king and China.

At half-past one we reached Ho-k'ou, just 24 hours from Man-hao, but of this time we had spent nearly 12 hours tied up at Hsin-kai. Hô-k'ou is a village of 500 houses or so, and is the last place in China in this direction, Lao-kai, the French frontier station, being separated from it by the Nam Ti or Nan-hsi Ho, which here joins the left bank of the Red River.

7: Hu K-5 (1934- ) 1946 AF16 Southwest China AF16



363 are narrow, in most cases not over eight to ten feet wide, and are paved with limestone slabs. The arrangement of streets, as a rule, is in harmony with local topography and with the general pattern of the settlement in question.

361 Like many other long settled and unplanned urban communities in the Orient, most of the urban centers in the Basin have no sharp delineation in their functional areas. In fact, many of the functional areas are so juxtaposed and intermixed that it is almost impossible to describe them.

366 Taking Chengtu, for example, the city, in so far as division of functional areas is concerned, is so undifferentiated that nearly the whole city may be considered as predominantly residential in function. This may even be true in some of the so-called business streets, because there are always families living behind shops and stores on the business streets. The matter is further complicated by the fact that families behind these shops may also carry on some handicraft manufacturing activities. Thus, business, residential, and manufacturing functions are all present in one area. Nevertheless, in many cases, one type of establishment or operation unit (such as shops, factories, residences, etc.) is so conspicuous that "functional cores"[1] may be recognized with relative ease, even though the delimitation of the "boundaries" of these "functional cores" cannot be made sharply.

361 An impressive feature of the urban scene of the Basin is that every city has a city wall. Although many cities have recently torn down their walls as a symbol of modernization, many of them still keep this age-old feudalistic structure. The city walls, made of bricks, are in general about 45 feet high and 3 feet wide. Owing to the absence of tall buildings in most of the urban areas, the city wall affords an ideal panoramic view of the city.

505 6. Transportation Patterns of the Basin

a) The major water routes.--Water routes are by far the most important means of transportation in the Basin. There are, all told, large and small, navigable and otherwise, 270 streams

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[1] By "functional core" is here defined as a conspicuous clustering-together of a number of establishments or operation units which perform a specific or principal function in that area or locality.

7: Hu K-5 (1934- ) 1946 AF16 Southwest China AF16



in the Basin, with a total length of 22,000 li.[1] Among them, the mighty Yangtse is, of course, the most significant. The Yangtse River traverses the entire width of the Basin in a southwest to northeast direction. It is the spinal cord of the whole stream system. 505

In so far as its use for transportation in the Basin is concerned, the Yangtse may be divided into two sections, namely, the I-Chang--Chungking section and the Chungking--I-Ping section (Fig. 7). In the first section, between I-Chang in the east and Chungking in the west, with a total distance of 912 kilometers, boats of three-meter draught may navigate during the high-water season (between May and November). Boats of two-meter draught or less ply this section during the whole year. In the second section, between Chungking and I-ping, with a total distance of 463 kilometers, boats with two-meter draught or less can navigate during high water, while boats of shallower draught (one meter or less) may navigate the whole course during low water.[2] I-ping is, for all practical purposes, the western-most point of navigation on the Yangtse (Fig. 7), although steamboats have made trial voyages as far as Ping Shan, twenty-five miles to the west of I-ping. Up to now, no river steamer has come regularly to this head of navigation.

The Yangtse is, for all practical purposes, the only important highway and the sole exit for the tremendous flow of goods from the Basin to the outside world. If the Basin be thought of as a bottle, the gorges of the Yangtse are certainly its vital neck. It is almost unimaginable that the Basin could have ever functioned as a prosperous geographic region without this generous gift of nature.

Of course, with the increasing growths of railroads and air transports in the Basin, the dominant position of the Yangtse may be somewhat affected. It is, however, fairly safe to say that in spite of these developments, the river probably will continue to play its significant role in the Basin for a long time to come. This prediction is based on the relative cheapness (though slow and difficult) of the river transport, the bulky nature of the commodities (largely agricultural and forestry), and the great

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[1] Shen, op. cit., p. 11.

[2] Ibid., p. 37.

T. Hu K-5 (1934- ) 1946 AF16 Southwest China AF16



505 difficulties (due to the rugged topography) of building other means of transportation in the Basin.

The harnessing of this mighty, swift, and treacherous stream by men for their own benefit, however, has been by no means an easy task. It is certainly not a story without excitement. There are tremendous difficulties involved in negotiating the world-famous Yangtse gorges, the numerous shoals, the whirlpools, and the rapids at intervals along the course of this mighty water-
501 way. For centuries, the Chinese, with their slow-moving but colorful junks, have battled patiently and painstakingly with the perilous river. It was not until 1898, after experimenting for nearly two decades, led by a brave Englishmen, Captain A. Little and later followed by the tireless effort of many energetic Chinese leaders in the Basin, that the first modern steamboat successfully passed through the gorges and arrived at Chungking.[1] Three years later, in 1901, a trial voyage farthest west to Sui-fu (I-Ping) was successful.

It was not until 1909, ten years after the first trial voyage, that suitable, shallow, and specially-designed vessels with a sufficiently large carrying capacity were put into use and regular steam navigation on the upper Yangtse became commercially possible. Since then, the development has been phenomenal. In 1919 there were only about 220 steamers of all tonnage-classes, totalling 55,000 odd tons, plying the upper Yangtse between the I-Chang and I-Ping section. But by 1936 the number of steamers totalled 2,140, with a total tonnage of 760,000 tons.[2]

The growth of steam navigation on the Yangtse resulted in the rapid and almost complete disappearance of the old colorful Chinese junks on the upper Yangtse. In 1894, a peak year in junk traffic, there were altogether 2,900 junks, with a total tonnage of over 100,000 tons. By 1925, thirty years later, only one junk, with a tonnage of 20 tons, was reported in the river traffic of the upper Yangtse.

505 Of all the navigable tributaries of the Yangtse, the Chialing River system is by far the most important. At Chungking the Yangtse is joined on its left bank by this important tributary, the so-called "little river." This is made up of three streams

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[1] L. C. Cheng, "The Waterways in Szechuan," Journal of Geog. Society of China, VI (1939), 7.

[2] Shen, op. cit., p. 38.

7: Hu K-5 (1934- ) 1946 AF16 Southwest China AF16



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which unite at Ho-Chuan (Fig. 7). The Chialing River and its tributaries drain a fan-shaped area with an extent of a little over 160,000 square kilometers, or about a third of the total area of the province.[1] Aside from the Yangtse, the Chialing system is one of the most vital arteries of transportation in the Basin. Agriculturally, this area is not so prosperous as that of the Chengtu Plain or the To River area. Its average population density is likewise not so dense as those of the later two areas (Fig. 10), but, nevertheless, this area is rich in the production of herbs, tung tree and other forestry products, all of which are moved to markets by river transportation.

The importance of the Chialing drainage system is due to its navigability for long distances. The eastern-most branch, the Chu River (Fig. 7), is navigable, for small craft, up to some 40 miles north of Tung-hsiang-hsien. The central branch, the Chialing itself, is navigable for fairly large boats, to Kuang-yuan, extending far into southern Kansu. Ships laden with herbs and other agricultural products descend to Kuang Yuan from Pikou in the province of Kansu. The western-most branch, the Fou River, is navigable up to Chung-pa, and one of its western tributaries taps the northeastern corner of Chengtu Plain (Fig. 7). The Chialing system is thus the greatest collecting and distributing center of the agricultural and forestry products in the Basin.

The Min River is noted not only for supplying water to the famous irrigation system of Chengtu Plain but also for its great significance for transportation purposes. In so far as navigation is concerned, the Min River may be divided into three parts (Fig. 7). The section between Kuan-hsien and Chengtu is navigable to small flat-bottomed junks all year round (Fig. 7). The section between Chengtu and Lo-shan is navigable to boats with a capacity of 50 to 60 tons all year round; recently the trial voyage by the Ming Seng Company, with steamers of 200 tons and in less than one-foot draught, has been successful. It is announced that this route will be opened as a regular commercial route in the very near future. Finally, the section between Lo-shan and I-ping, a distance of 160 kilometer, may be negotiated during the high-water season (June to November) by steamers with one to two-feet draught.[2]

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[1] Cheng, op. cit., p. 29.

[2] Shen, op. cit., p. 56.

7: Hu K-5 (1934- ) 1946 AF16 Southwest China AF16



505 Here, in the Min River drainage area, one finds a region of the richest agricultural production (with the highest cultivation-land index) and has the highest population density of the whole Basin (Figs. 21 and 10).

Among all the main tributaries of the Yangtse, the To River possesses the richest hinterland and has the most diverse agricultural and horticultural products. The To River, formerly known as the twin river of the Min, is composed of two branches: one is the Mien Yang Ho, originating in the Chiu Ting mountains, and the other, the Pai Tiao and Fu Yang rivers, tributaries of the Min. Both of these branches meet at Chao Chia Tu (Fig. 7) where, for all practical purposes, is situated the head of navigation of the whole To system. From Chao Chia Tu to Lu Hsien, the confluence of the To and the Yangtse, with a total of a little over 280 kilometers, junks with 50 to 60 tons capacity may ply all the year round. Between Lu-hsien and Fu-shun, steamers with one-to two-feet draught may negotiate during high water.

491 b) Highway patterns.--Next to the waterways, the highways furnish the most important channels of transportation in the Basin. The era of modern highway building in the Basin was first initiated in 1928, when a group of European-trained young Szechuanese engineers returned home and advised strongly the undertaking of such a program. The first highway completed was between Chengtu and Kuan-hsien (Fig. 7). But it was not until 1935, after the political unification of the Basin and the establishment of the provincial Bureau of Highway Construction, that the highway building program was carefully launched and systematically coordinated.

On account of the thoroughly dissected topography and the presence of numerous anticlinal ridges, together with the easily weathered rock structures, the building of highways in the Basin is not without serious difficulties. The constant threat of landslides, the presence of numerous steep slope and hairpin turns, and the necessity of building many solid embankments, make the building and maintenance of highways in the Basin both costly and hazardous.

At the end of 1940, more than 6,400 kilometers of highways were completed within the Basin. In fact of the province's 136 districts, 85 districts, or 62 per cent, now have highway connections. These include six trunk inter-provincial lines and a number